

# Service Manual

**PIONEER**  
The Art of Entertainment

•KEH-P7400/UC



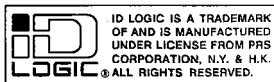
ORDER NO.  
**CRT1845**

MULTI-CD CONTROL HIGH POWER CASSETTE PLAYER WITH ID-LOGIC TUNER

# KEH-P7400 UC

MULTI-CD CONTROL HIGH POWER CASSETTE PLAYER WITH FM/AM TUNER

# KEH-P7450 ES



## NOTE:

- See the separate manual CX-631(CRT1640) for the cassette mechanism description.
- The cassette mechanism employed in this model is one of X-2L series.
- Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
- For the service mentioned in this manual, the special tools GGD1056 and GGD1019 have to be used. See the sections and "Adjustment" on how to use these tools.
- Service Precautions

This device employs an inverter as the power supply for the EL. The inverter has an output voltage reach approximately 300 Vrms (AC), under no-load condition and about 180 Vrms (AC), with the EL connected. Utmost care should be used not to suffer from a possible electric shock, accordingly.

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## 1. SAFETY INFORMATION(UC model)

### CAUTION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely; you should not risk trying to do so and refer the repair to a qualified service technician.

### WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5). When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

## 2. DISASSEMBLY

### ● Removing the Case(not shown)

1. Remove the two screws.
2. Insert and turn a flat screwdriver to remove the case.

### ● Removing the Cassette Mechanism Module (not shown)

1. Remove the four screws.
2. Disconnect the connector.
3. Remove the cassette mechanism module.

### ● Removing the Panel Assy

1. Remove the two screws, and disconnect the two connectors.
2. Disengage the stoppers at four locations indicated by arrows.
3. Remove the panel assy.

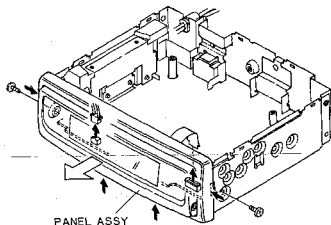


Fig.1

### ● Removing the Tuner Amp Unit

1. Remove the two screws A and three screws B.
2. Remove the one screw C.
3. Unbend the tabs at two locations indicated by arrows until straight.
4. Raise up on tuner amp unit.

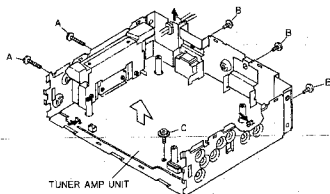


Fig.2

### 3. TEST MODE

### 3.1 TEST MODE

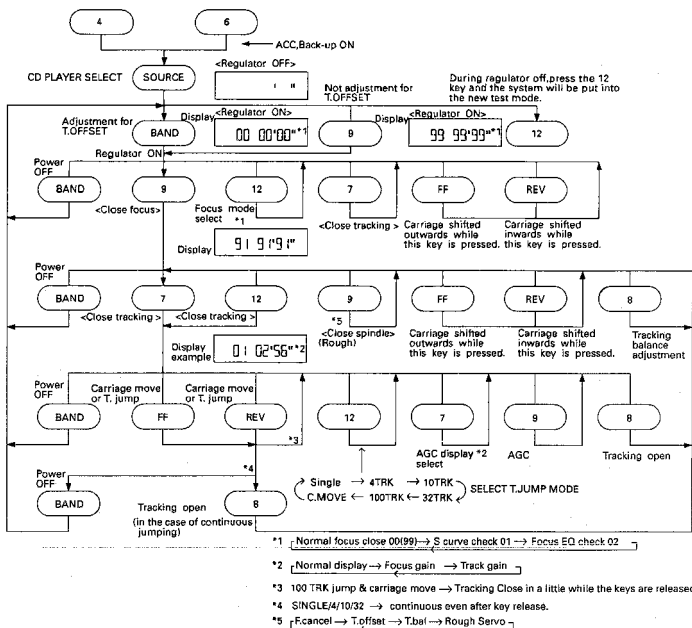
Test mode is mainly used adjustment of IP BUS type CD multi players.(Such as CDX-P610)

- Switching to test mode

While pressing the 4, 6 keys together, switch the back up and ACC ON.

- Canceling test mode  
Switch the back up and ACC off.
- SINGLE/10TRK/32TRK will continue to operate even after the key is released. Tracking closed the moment C-MOVE is released.
- JUMP MODE resets to SINGLE as soon as power is switched off.

● **Flow Chart**



## 3.2 ERROR NUMBERS AND NEW TEST MODE

### ● Indicating An Error Number

If the CD should fail to operate in CD multi player or if an error has taken place during the operation and resulted in an error, the player will enter into the error mode. And the cause of such error is numerically indicated.

This is aimed at assisting an analysis or repair.

#### (1) Basic Means of Display

- With ERROR indicated in "MODE" on IP-BUS Display data, an error code is transmitted by the use of MIN and SEC. Identical data are transmitted with MIN and SEC.
- Examples of Display ERROR-XX

#### (2) Error Codes

Error Code	Classification	Description	Cause/Detail
10	ELECTRIC	Carriage home failure	Carriage doesn't move to or from the innermost position → Home switch failed and/or carriage immobile
11	ELECTRIC	Focus failure	Focus failed → Defects, disc upside-down, severe vibration
12	ELECTRIC	SETUP failure Subcode failure	Spindle failed to lock or subcode unreadable → Spindle defective, defect, severe vibration
14	ELECTRIC	Mirror failure	Unrecorded CD-R The disc is upside-down, defects, vibration
17	ELECTRIC	Set up failure	AGC protect failed → Defects, disc upside-down, severe vibration
30	ELECTRIC	Search time out	Failed to reach target address → Carriage/tracking defective and/or defects
A0	SYSTEM	Power failure	Power overvoltage or short circuit detected → Switching transistor defective and/or power abnormal
50	MECHANISM	An error upon ejection	MAG switch release time has time out Elevation time out when eject
60	MECHANISM	An error while putting in and out the tray	Tray in/out time has time out Tray is caught when put in
70	MECHANISM	An error upon elevation	Elevation time has time out
80	MECHANISM	An error with an empty magazine inserted	No disc is available

\* Setup means a series of operations after focusing up to sound output.

### ● New Test Mode (aging operation and setup analysis)

The single CD player plays in normal mode. After being set up, it will display FOK (focus), LOCK (spindle), subcode, sound skip, protection against a mechanical error or the like, occurrence of an error, cause and time of an expiry, if any, (and disc number)

During the setup, the CD software operation status (internal RAM and C-point) is displayed.

#### (1) How to enter NEW TEST Mode

See the test mode flow chart Page 3.

## (2) Relations of keys between TEST and NEW TEST Modes

Keys	Test Mode		New Test Mode	
	Regulator OFF	Regulator ON	PLAY in progress	Error Occurred, Protection Activated
BAND	Regulator ON	Regulator OFF	—	Time of occurrence / cause of error select
FF	—	FWD-Kick	TRACK UP / FF	—
REV	—	REV-Kick	TRACK DOWN / REV	—
7	—	Tracking close	SCAN	—
8	—	Tracking open	MODE	—
9	—	Focus close	ITP	—
12	To New Test Mode	Focus Mode Select	AUTO/MANUAL	—

Operations, such as EJECT, CD ON/OFF, etc. are performed normally

## (3) Error Cause (Error Number) Code

Error Code	Classification	Mode	Description	Cause	Detail
40	ELECTRIC	PLAY	FOK=L 100ms	Put out of focus	Scratch,
41	ELECTRIC	PLAY	LOCK=L 100ms	Spindle unlock	Stain,
42	ELECTRIC	PLAY	Subcode unacceptable 500ms	Failed to read subcode	Vibration, Servo defect, etc...
43	ELECTRIC	PLAY	Sound skipped	Last address memory operated	

## (4) Indicating an Operation Status During Setup

Status No.	Description	Protection operation
01	Carriage home mode started	None
02	Carriage moving inwards	10-second time out, home switch failed
03	Carriage moving outwards	10-second time out, home switch failed
05	Carriage moving outwards	None
11	Setup started	None
12	Spindle turn/Focus search started	None
13	Waiting for focus closure (XSI=L)	Failure to close focus
10, 14	Waiting for focus closure (FOK=H)	Failure to close focus
15, 16, 17	Focus closed, Tracking open	Focus disrupted
18	During focus AGC Subcode waiting	Focus disrupted
19	During tracking AGC	Disrupted focus
20	Waiting for MIRR, LOCK or subcode read Carriage closed, SPINDLE=ADAPTIVE	Focus disrupted, MIRR NG, failure to lock, failed to read subcode

## (5) Example of Display.

- SET UP in progress

TRACK-11

- Operation (PLAY, SEARCH, etc.) in progress perfectly identical with that in the normal mode.

- Protection/Error upon occurrence

(a) Error number indicated

ERROR-xx

Select the display with the BAND key.

(b) Track number

TRACK-10

## 4. ADJUSTMENT

## ● Connection Diagram

## NOTE:

Select C1 so that total capacity of 80pF is attained from the direction of the receiver jack.

Z: Output impedance of SSG.

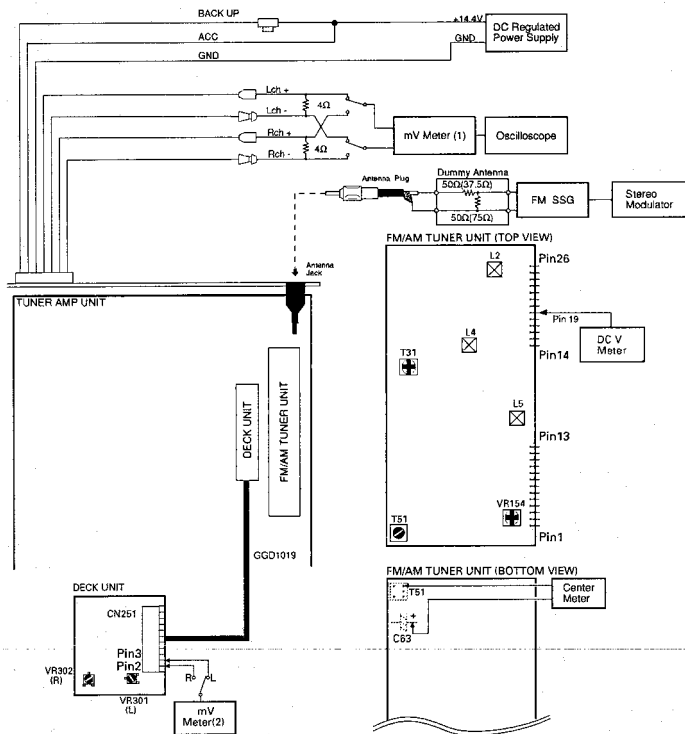


Fig. 3

Modulation M: MONO MOD., 400Hz 30%(22.5kHz Dev.) or 400Hz 100%(75kHz Dev.)

S: STEREO MOD., 1kHz, L or R=30%(20.25kHz+7.5kHz Dev.)

NOTE: Before proceeding to further adjustments after switching power ON, let the tuner run for ten minutes to allow the circuits to stabilize.

#### FM ADJUSTMENT(KEH-P7400/UC)

	No.	FM SSG		Displayed Frequency(MHz)	Adjustment Point	Adjustment Method (Switch Position)
		Frequency(MHz)	Level(dBf)			
TUN Volt	1	*****	*****	107.9	L5	DC V Meter : 6V
IF	2	98.1 M	60	98.1	T51	Center Meter : 0
ANT Coil	3	98.1 M	5	98.1	L2	mV Meter(1) : Maximum
RF Coil	4	98.1 M	5	98.1	L4	mV Meter(1) : Maximum
IFT	5	98.1 M	5	98.1	T31	mV Meter(1) : Maximum (STEREO MODE)
ARC	6	98.1 S	40	98.1	VR154	mV Meter(1) : Separation 5dB (STEREO MODE)

#### FM ADJUSTMENT(KEH-P7450/ES)

	No.	FM SSG		Displayed Frequency(MHz)	Adjustment Point	Adjustment Method (Switch Position)
		Frequency(MHz)	Level(dBf)			
TUN Volt	1	*****	*****	108.0	L5	DC V Meter : 6V
IF	2	98.1 M	60	98.1	T51	Center Meter : 0
ANT Coil	3	98.1 M	5	98.1	L2	mV Meter(1) : Maximum
RF Coil	4	98.1 M	5	98.1	L4	mV Meter(1) : Maximum
IFT	5	98.1 M	5	98.1	T31	mV Meter(1) : Maximum (STEREO MODE)
ARC	6	98.1 S	40	98.1	VR154	mV Meter(1) : Separation 5dB (STEREO MODE)

#### DOLBY NR ADJUSTMENT

No.	Test Tape	Adjustment Point	Adjustment Method (Switch Position)
1	NCT-150 (400Hz, 200nwb/m)	VR301(Lch), VR302(Rch)	mV Meter(2) : -6.0dB±1.0dB (DOLBY NR Switch : OFF)

● For Repair of the Key Board Unit, Use the Extension-Cord Tool GGD1056.

● For Repair of the Cassette Mechanism Module, Use the Extension-Cord Tool GGD1019.





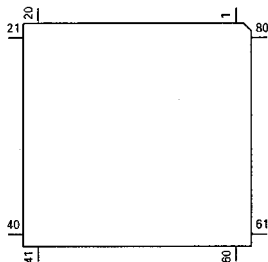
## ● Pin Functions(PD4682A,PD4684A)

Pin No.	Pin Name	I/O	Format	Function and Operation
1	IDRST	O	C	ID-LOGIC reset output
2	IDSEL	O	C	ID-LOGIC select output
3	NC			Not used
4	AVSS			A/D GND
5	IDRDY	I		ID-LOGIC ready input
6	NC			Not used
7	AVREF1			(Connect to VDD)
8	KYDT	I		Key data input
9	DPDT	O	C	Display data output
10	SWVDD	O	C	Grille power supply control output
11	IDDI	I		ID-LOGIC communication data input
12	IDDO	O	C	ID-LOGIC communication data output
13	IDCK	O	C	ID-LOGIC communication clock output
14	MSIN	I		MS sense
15	MTLSW	I		Metal sense input
16	POS(TSI)	I		Position sense
17	RES(TSO)	I		Cassette mechanism reverse end sense input
18	NES(TCK)	I		Cassette mechanism forward end sense input
19	DIRO	O	C	Head F/R select output
20	PLAY	O	C	MS gain select output
21	DLBYBC	O	C	Dolby NR B/C select output
22	NR	O	C	NR output
23	SC2	O	C	Cassette mechanism sub motor control output
24	SC1	O	C	Cassette mechanism sub motor control output
25	CM	O	C	Cassette mechanism capstan motor control output
26	STBY	O	C	Stand-by control
27	LOADSW	I		Tape loading input
28	FLEX	O	C	FLEX output
29	PDI	I		PLL data input
30	PCK	O	C	PLL clock output
31	PDO	O	C	PLL data output
32	PCE	O	C	PLL data chip enable output
33	VSS			GND
34	ST	I		STEREO input
35	SPMPX0	O	C	MPX output for spectrum analyzer
36,37	SPMPX1,2	O	N	MPX output for spectrum analyzer
38	LED	O	N	Alarm LED output
39	DOORH	O	C	Door system select output
40	DRELAY	O	C	External relay output
41	ASENB	O	C	Slave power supply control output
42,43	NC			Not used
44	MUTE	O	C	System mute output
45	PEE	O	C	Beep tone output
46	VST	O	C	Strobe pulse output for electronic volume
47	VDT	O	C	Data output for electronic volume
48	VCK	O	C	Clock output for electronic volume
49	PCL	O	C	Clock adjustment output
50	LCDPW	O	C	LCD back light power supply control output
51	SYSPW	O	C	System power supply control output
52	NC			Not used
53	CSENS	I		Flap close sense input
54	ISENS	I		Illumination sense input
55	TELIN	I		TEL mute signal input
56	TX	O	C	IP BUS data output
57	RX	I		IP BUS data input
58	DRSENS	I		Door open/close sense input
59	SD	I		SD input

# KEH-P7400,P7450

Pin No.	Pin Name	I/O	Format	Function and Operation
60	RESET	I		Reset input
61,62	NC			Not used
63	BSSENS	I		Back up power sense input
64	ASSENS	I		ACC power sense input
65	DSSENS	I		Grille detach sense
66	DIM	O	C	Dimmer select output
67	ILMPW	O	C	Illumination power supply output
68	VDD			Power supply
69	X2			Crystal oscillator connection pin
70	X1			Crystal oscillator connection pin
71	IC			GND
72	XT2			Open
73	TESTIN	I		Test program mode input
74	AVDD			Positive power supply terminal for analog circuit
75	AVREF0			GND
76	SL	I		SD level input from tuner
77	SEL	I		Select input for the destination
78	LEVL	I		Audio Lch level input
79	LEVR	I		Audio Rch level input
80	NC			Not used

\*PD4682A,PD4684A

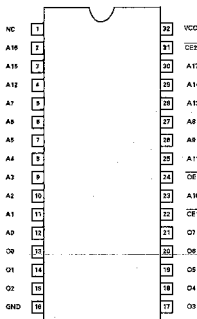


Format	Meaning
C	C MOS
N	N channel open drain

IC's marked by\* are MOS type.

Be careful in handling them because they are very liable to be damaged by electrostatic induction.

\*PD4633A

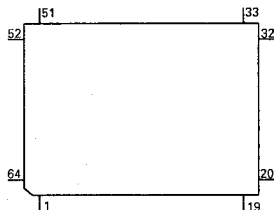


A0-A17:Address input  
O0-O7 :Data output  
CE1,2 :Chip enable input  
OE :Output enable input

## ● Pin Functions(PD6165A)

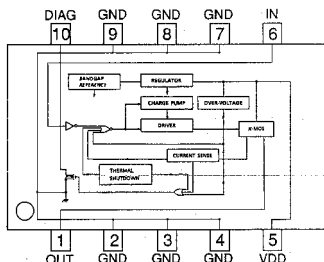
Pin No.	Pin Name	I/O	Format	Function and Operation
1-8	NC			Not used
9-11	ADD13-15	O	N	ROM address 13-15
12	AVCC			5V power supply
13	AVR			5V power supply
14	AVSS			GND
15	IRSEL	I		Select input
16-19	NC			Not used
20	IRrst	I		Reset input
21,22	MOD0,1			GND
23	XIN	I		Crystal oscillating element connection pin
24	XOUT	O		Crystal oscillating element connection pin
25	VSS			GND
26-28	NC			Not used
29	IRRDY	O	C	Communication ready output
30	OE	O	C	ROM output control
31	ROMEN	O	C	ROM enable
32,33	ADD17,16	O	C	ROM address 17,16
34-41	ADD7-0	O	C	ROM address 7-0
42-49	DT7-0	I		ROM data input 7-0
50	VSS			GND
51	TEST	I		Test program input
52	IRSCK	I		Communication clock input
53	IRDO	O	C	Communication data output
54	IRDI	I		Communication data input
55,56	NC			Not used
57	VCC			5V power supply
58,59	NC			Not used
60-64	ADD8-12	O	N	ROM address 8-12

\*PD6165A



Format	Meaning
C	C MOS
N	N channel open drain

TPD1018F



## ● Pin Functions(PM0008AF)

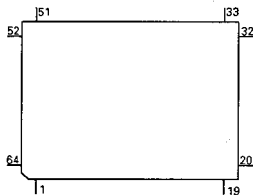
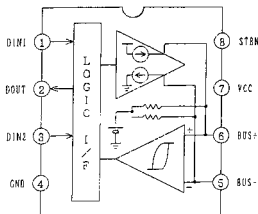
Pin No.	Pin Name	I/O	Format	Function and Operation
1	SWOUT_L	O		Selector and sound scape output
2	LOUD_L			Loudness
3	VRIN_L	I		Main volume input
4	TRE-CNT_L			Treble control
5	TONEOUT_L	O		Tone control output
6	FADERIN_L	I		Pre-fader input
7	MID-CNT_L			Middle control
8	MID-L_L			Inductor terminal
9	MID-DIF_L	I		Inductor terminal
10	BASS-CNT_L			Bass control
11	BASS-L_L			Inductor terminal
12	BASS-DIF_L	I		Inductor terminal
13	FMIN_L	I		Main input (front)
14	RMIN_L	I		Main input (rear)
15	MFOUT_L	O		Main output (front)
16	MROUT_L	O		Main output (rear)
17	PFOUT_L	O		Pre-output (front)
18	PROUT_L	O		Pre-output (rear)
19	PRE-OUT_L	O		Pre-output (fader)
20	FIE_L			Front image enhancer control
21	DVCC			Power supply (digital)
22	MUTE	O	C	System mute output
23	STB	O	C	LSI strobe output
24	CLK	I		Master clock input
25	DATA	I		Serial data input
26	CT			Time select
27	DGND			Digital circuit GND
28	C1			Sub woofer LPF select
29	C3			Sub woofer LPF select
30	C2			Sub woofer LPF select
31	LPFOUT			Sub woofer LPF select
32	FIE_R			Front image enhancer control
33	PRE-OUT_R	O		Pre-output (fader)
34	PROUT_R	O		Pre-output (rear)
35	PFOUT_R	O		Pre-output (front)
36	MROUT_R	O		Main output (rear)
37	MFOUT_R	O		Main output (front)
38	RMIN_R	I		Main input (rear)
39	FMIN_R	I		Main input (front)
40	BASS-DIF_R	I		Inductor terminal
41	BASS-L_R			Inductor terminal
42	BASS-CNT_R			Bass control
43	MID-DIF_R	I		Inductor terminal
44	MID-L_R			Inductor terminal
45	MID-CNT_R			Middle control
46	FADERIN_R	I		Pre-fader input
47	TONEOUT_R	O		Tone control output
48	TRE-CNT_R			Treble control
49	VRIN_R	I		Main volume input
50	LOUD_R			Loudness
51	SWOUT_R	O		Selector and sound scape output
52	IN4_R	I		Sound scape volume input
53	IN3_R	I		Selector input
54	IN2_R	I		Selector input
55	IN1_R	I		Selector input
56	AVCC			Power supply (analogue)
57-59	NC			Not used
60	VREF			Noise cut terminal

Pin No.	Pin Name	I/O	Format	Function and Operation
61	IN1_L	I		Selector input
62	IN2_L	I		Selector input
63	IN3_L	I		Selector input
64	IN4_L	I		Sound scape volume input

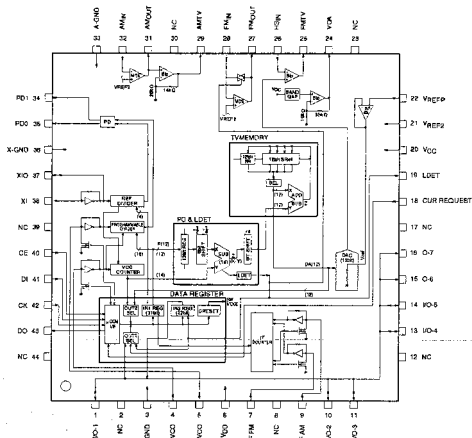
\*PM0008AF

Format	Meaning
C	C MOS

CA0008AM



PM2005B



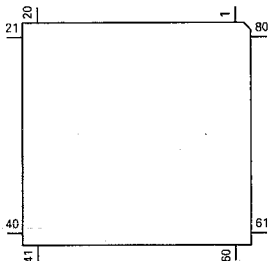
# KEH-P7400,P7450

## ● Pin Functions(PD5364A)

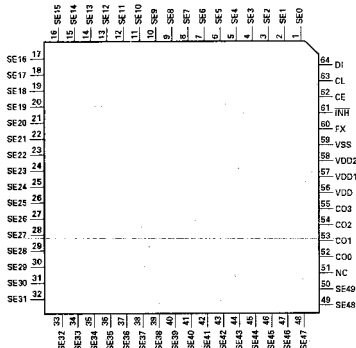
Pin No.	Pin Name	I/O	Format	Function and Operation
1-3	COM2-0	O	C	LCD common output
4-6	VL3-1	I		LCD bias power supply input
7	NC			Not used
8	BACKILL	O	C	Illumination signal output
9	NC			Open
10	FX	O	C	LCD driver FX output
11,12	KST3,2	O	C	Key strobe output
13-16	KDT3-0	I		Key data input
17,18	KST1,0	O	C	Key strobe output
19	Tx	O	C	UART output
20	Rx	I		UART input
21	NC			Open
22	REM	I		Remote control signal input
23	NC			Open
24	NC			Pull down
25	RESET	I		Reset input
26,27	KST5,4	O	C	Key strobe output
28	XIN	I		Crystal oscillator connection pin
29	XOUT	O		Crystal oscillator connection pin
30	VSS			GND
31	INH	O	C	Switch off the LCD driver
32	DI	O	C	LCD driver data output
33	CL	O	C	LCD driver data clock output
34	CE	O	C	LCD driver chip in enable output
35-39	NC			Open
40-70	SEG38-8	O	C	LCD segment signal
71	VDD			Power supply
72-79	SEG7-0	O	C	LCD segment signal
80	COM3	O	C	LCD common output

Format	Meaning
C	C MOS

\*PD5364A



\*LC75824E









====Circuit Symbol & No. Part Name====	Part No.	====Circuit Symbol & No. Part Name====	Part No.
R 431 433 602 606 612 613 653 693 776	RS1/105473J	C 303 304	CEAR47M50LL
R 434	RA4C102J	C 305 306	CCSQCH101J50
R 446	RS1/105393J	C 321 322 323 324	CEAR22M50LL
R 452 604 611 615 634 636 639	RS1/105103J	C 334	CH1187
R 456 460	RS1/850R0J	C 335	CEA220M16LL
R 458	RS1/1050R0J	C 375 376 377 378 623 624 626 631	CCSQCH101J50
R 462	RS1/165222J	C 379 380 633	CEA2R2M50LL
R 463 464 468 469	RS1/1050R0J	C 401	CKSQYB223K25
R 633	RS1/105211J	C 402	CKSQYB273K25
R 637	RS1/165182J	C 404	CKSQYB223K25
R 640	RS1/165124J	C 406 611 625 627	CKSQYB102K50
R 644	RS1/105122J	C 408	CEA220M10LL
R 646 700 703 706	RS1/105222J	C 409 440 628 632	CCSQCH101J50
R 652 669 672	RA3C473J	C 410 425 441 443 634 635	CKSQYB103K25
R 657	RS1/105473J	C 411 412 422	CEA220M163LL
R 658 659	RA3C473J	C 413	CKSQYB104K16
R 662	RS1/105620J	C 414 424	CH1165
R 667 668 669 710 760 761	RS1/165473J	C 417	CKLSR473K16
R 675	RA4C222J	C 423	CKSQYB473K16
R 679 682	RA3C222J	C 427 428	CCSQCH150J50
R 685	RA4C681J	C 432	CKSQYB473K16
R 690	RS1/165224J	C 434 435	CKSQYB473K16
R 691 711 731 732 733 734	RS1/105102J	C 442	CCSQCH101J50
R 697	RS1/45681J	C 444	CCSRCH101J50
R 699	RS2P6R8JL	C 445	CCSRCH101J50
R 708	RS1/105473J	C 446	CCSQCH101J50
R 709	RS1/165104J	C 447	CKSRVB33K50
R 715	RS1/165204J	C 448	CKSQYB223K25
R 716	RS1/25681J	C 601 610	CEA10M50LL
R 725	RS1/165562J	C 602	CH1201
R 735 736 737 738 739 740 741 742 743 744	RS1/105102J	C 603 629	CKSQYB103K25
R 745 746 747 748 749 750 751 752 753 754	RS1/105102J	C 606	CKSQYB473K16
R 755 756	RS1/105102J	C 609	CEA330M10LL
R 762 763 764 773	RS1/165473J	C 612	CKSQYB102K50
R 766	RA3C681J	C 613	CH1181
R 768 777 778	RS1/165681J	C 614 616	CEAS470M10
R 769	RA4C473J	C 615	CEAS101M10
R 779	RS1/105473J	C 618	CKSQYB223K25
		C 621	CCSQCH330J50
		C 622	CCSQCH1270J50
CAPACITORS			
C 201 202	CKSQYB822K50	C 630	CEAS471M10
C 203 204 243 244 256 257 259 260 282 336	CEA10M50LL	C 639	CCSQCH101J50
C 205 206	CKSQYB152K50	C 640	CCSQCH101J50
C 207 208 211 212	CEA100M10NPLL	C 643	CKSQYB223K25
C 209 210	CKSQYB183K50	C 734	CEA100M16LL
C 213 214	CKSQYB334K16		
C 215 216 280 286 416 418 420 421 429 436	CKSQYB103K25		
C 217 218 381 382 605	CKSQYB105K16		
C 219 220	CKSQYB823K25		
C 225 226 227 228 253 255 258 283 284 638	CEA100M16LL		
C 231 232	CKSQYB333K25		
C 233 236 252 279 285 333 637	CKSYB104K16		
C 234	CKSQYB562K50		
C 235 430	CKSQYB473K16		
C 245 246 247 248	CEA100M16LL		
C 249 250	CEA10M50LL		
C 251 288 604	CEA470M10LL		
C 262	CKSQYB473K16		
C 271 272 281 287 290 620	CEA4R7M35LL		
C 273 274	CEA4R7M16NPLL		
C 275 276	CKSQYB222K50		
C 277	CS2A100M16		
C 278 289 292	CEA101M10LL		
C 291	CEA10M50NPLL		
C 301 302	CKSQYB104K16		
<div> <div>Key Board Unit</div> <div>Consists of</div> <div> <div>Key Board P.C.Board</div> <div>Switch P.C.Board</div> </div> </div>			
Unit Number : CWM4756			
Unit Name : Key Board Unit			
MISCELLANEOUS			
IC 901	PD5364A		
IC 902	LC75824E		
IC 905	RS-30		
Q 903	2SC2712		
D 901 902	MA153		
D 904 905 906 907	Chp LED	CL170FGCD	
D 908 909 910 911	Chp LED	CL170FGCD	
D 912 913 915 916	Chp LED	CL170FGCD	
D 917 918 919 920	Chp LED	CL170FGCD	
D 921 922 923 924	Chp LED	CL170FGCD	

# KEH-P7400,P7450

====Circuit Symbol & No. Part Name====	Part No.
D 926 927 928 929 Chip LED	CL170FGCO
D 930 931 Chip LED	CL170FGCO
D 935	MA151K
D 945 Chip LED	CL170FGCO
L 901 Inductor	LCTAAR7K4532
L 902 903 Inductor	LCTB2R2K2125
X 901 Ceramic Resonator 4.9152MHz	CSS1084
S 602 Switch	CSN1027
S 901 Switch	CSG1043
S 902 903 904 905 Switch	CSG1041
S 906 912 913 918 Switch	CSG1075
S 907 Switch	CSG1074
S 908 909 910 911 Switch	CSG1041
S 919 922 923 Switch	CSG1075
S 914 915 916 917 Switch	CSG1041
S 920 921 924 Switch	CSG1072
EL 901 EL	CEL1424
LCD901 LCD	CAW1352
RESISTORS	
R 901 902	RS1/16S222J
R 903	RS1/16S2R2J
R 914 915 916 917 918 919 920 921 922 923	RS1/8S821J
R 924	RS1/25681J
R 925 926 929 930 931 934 935 936	RS1/16S472J
R 927 932	RS1/16S103J
R 928	RS1/16S473J
R 933	RS1/8S151J
R 941	RS1/16S102J
R 942	RS1/16S121J
R 943 944 945 946 947 948 949 950 951 952	RS1/8S821J
R 953	RA4C102J
CAPACITORS	
C 901 902	CSZSR100M6R3
C 914 921	CKSQYB104K16
C 915 916 919 920	CKSQYB473K16
C 922	CKSQYB273K25
Unit Number : CWE1417	
Unit Name : FM/AM Tuner Unit	
MISCELLANEOUS	
IC 1	PA4023A
IC 2	PA4024A
Q 1 31 202	2SC2412KLN
Q 2 203	DTC124EU
Q 3	3SK263
Q 201	2SK932
D 1 2	RD39JS
D 4	1SV251
D 5 7 8	KV1410-F1
D 6 201 202	MA157
D 231	SVC253
L 2 4	CTC1108
L 3 Inductor	LCTB2R2K2125
L 5 Coil	CTC1107
L 51 Ferri-Inductor	LAU150K
L 201 Ferri-Inductor	LAU4R7K
L 202 Ferri-Inductor	LAU330K
L 203 Inductor	CTF1287
L 208 Inductor	LAU121K
L 231 Inductor	LAU3R3J2225
T 31 Coil	CTE1116
T 51 Coil	CTC1136
CF 51 52 53 Ceramic Filter	CTF1290
CF 232 Ceramic Filter	CTF1348
X 151 Ceramic Resonator 920.5kHz	CSS1365
X 231 Crystal Resonator 10.26MHz	CSS1111
VR 154 Semi-fixed 150kΩ(B)	CCP1213

====Circuit Symbol & No. Part Name====	Part No.
RESISTORS	
R 1 2	RS1/16S225J
R 4	RS1/16S154J
R 5	RS1/16S391J
R 6 10 202	RS1/16S223J
R 7 247	RS1/16S123J
R 8 17	RS1/16S332J
R 9	RS1/16S473J
R 11	RS1/16S124J
R 13	RS1/16S563J
R 15	RS1/16S271J
R 16	RS1/16S104J
R 18	RS1/16S332J
R 31	RS1/16S470J
R 32 215	RS1/16S822J
R 33	RS1/16S822J
R 34 35	RS1/16S331J
R 51	RS1/16S271J
R 52	RS1/16S560J
R 55	RS1/16S102J
R 56	RS1/16S823J
R 61	RS1/16S332J
R 62	RS1/16S273J
R 101	RS1/16S272J
R 102	RS1/16S568J
R 103	RS1/16S333J
R 104	RS1/16S334J
R 105	RS1/16S683J
R 107	RS1/16S222J
R 151	RS1/15S222J
R 152	RS1/16S393J
R 155	RS1/16S273J
R 158	RS1/16S243J
R 157	RS1/16S203J
R 160	RS1/16S222J
R 161	RS1/16S563J
R 162	RS1/16S105J
R 163	RS1/16S223J
R 203	RS1/16S225J
R 204	RS1/16S103J
R 206	RS1/16S226J
R 207	RS1/16S101J
R 208 217	RS1/16S102J
R 209	RS1/16S471J
R 214	RS1/16S822J
R 231	RS1/16S272J
R 232	RS1/16S473J
R 237	RS1/16S103J
R 238	RS1/16S104J
R 239	RS1/16S104J
R 240	RS1/16S332J
R 241	RS1/16S202J
R 243	RS1/16S183J
R 244	RS1/16S472J
CAPACITORS	
C 1	CCSQCH060D60
C 2	CCSRCH020C50
C 4	CCSRCH020J50
C 6	CCSRCH020J50
C 8 18 25 31 52 59 62 105 107 213	CKSRYB103K25
C 9 34 56 152 160 241	CKSQYB104K16
C 10	CCSRCH0R5C50
C 11	CEA010M50LL
C 12 13 17 19 20	CKSRYB222K50
C 14	CCSRCH020J50

Circuit Symbol & No. Part Name=====		Part No.	Circuit Symbol & No. Part Name=====		Part No.
C 15		CCSRCH060D50			
C 16		CCSRCH080D50		RESISTORS	
C 21		CEA100M10LL	R 255 256		RS1/16S181J
C 22		CCSRTH090D50	R 271		RS1/16S183J
C 23		CCSRTH120J50	R 272	(KEH-P7400/UC)	RS1/16S203J
			R 273	(KEH-P7450/ES)	RS1/16S183J
C 24		CCSRCH471J50	R 272 274 275 276 321 322 351 352 353 354		RS1/16S102J
C 26		CCSRCH101J50			
C 32		CKSQYB472K50	R 277 281 282 283 284 373 374 375		RS1/RS0R0J
C 33		CCSRCH050C50	R 278 301 302 371 404		RS1/16S0R0J
C 36		CCSRRH201J50	R 323	(KEH-P7450/ES)	RS1/16S102J
			R 355		RS1/10S274J
C 51		CKSRVB223K25	R 356		RS1/10S202J
C 54		CCSRCH470J50			
C 55		CKSQYB223K25	R 357		RS1/10S472J
C 57		CKSRVB472K50	R 358 359		RS1/10S103J
C 58 234		CEA330M10LL	R 360		RS1/10S102J
			R 361		RS1/10S622J
C 60		CKSRVB102K50	R 372		RS1/10S0R0J
C 61		CKSRVB102K50			
C 63		CEAR22M50LL	R 401		RS1/16S821J
C 101		CEA100M10NPLL	R 402		RS1/16S392J
C 102		CKSRVB182K50	R 403		RS1/16S105J
				CAPACITORS	
C 103		CKSRVB682K25	C 251 252 253 254		CKSRVB301K50
C 104		CEA2R2M50LL	C 255		CKSRVB109K50
C 106		CCSRCH151J50	C 257 258		CEV470M6R3
C 151		CKSRVB472K50	C 271 307 308		CKSQYB104K16
C 153 157		CEA3R3M50LL	C 272 301 302		CEV100M16
C 154		CKSQYB104K16	C 303 304		CEV010M50
C 158		CKSYB474K16	C 305 306		CKSQYB68K16
C 159		CEA220M6R3LL	C 322		CEV100M15
C 161 209		CKSQYB104K16	C 351	(KEH-P7400/UC)	CKSYB224K25
C 162		CEA3R3M50LL	C 352		CKSQYB392K50
C 163		CKSRVB102K50	C 353 356		CKSQYB109K50
C 170 202		CCSRCH100D50	C 354		CKSQYB473K50
C 201 250		CCSRCH471J50	C 355		CKSYB104K50
C 203 235		CKSRVB332K50	C 402		CCSRCH151J50
C 204 205 236 244		CKSQYB473K16	C 403		CKSYB684K16
			C 404		CKSYB333K25
C 206 233		CKSQYB104K16			CKSYB333K16
C 207		CCSRCH850J50			
C 211		CCSRCH101J50			
C 212		CEA470M6R3LL			
C 216		CCSRCH101J50			
C 217		CEA1R5M50LL	Unit Number :		
C 219		CCSRCH471J50	Unit Name : P.C.Board Unit		
C 220 230		CKSRVB103K25			
C 231		CCSRCH330J50	S 1 2	Switch (Load,70 $\mu$ S)	ESG1004
C 232		CCSRCH150J50	EGN 1	Photo-Interrupter	EGN1005
			R 1		RD1/4HM181J
C 237		CCSRCH120J50			
C 239		CKSRVB472K50	Unit Number :		
C 240 242		CEAR47M50LL	Unit Name : Reel P.C.Board		
C 243		CEAR33M50LL			
C 245		CKSRVB183K25	EGN 2 3	Photo-Reflector	EGN1004
C 246		CKSQYB473K16	Miscellaneous Parts List		
Unit Number : CWM4528(KEH-P7400/UC)			M 1	Motor Unit (Main)	EXA1428
: CWM4527(KEH-P7450/ES)			M 2	Motor Unit (Sub)	EXA1382
Unit Name : Deck Unit			HD 1	Head Assy	EXA1404
MISCELLANEOUS					
IC 251	(KEH-P7400/UC)	CXA1911Q			
IC 257	(KEH-P7450/ES)	CXA1910Q			
IC 351		PA2020A			
Q 351		ZSB1260			
Q 352		ZSC4102			
D 351		MA141K			
VR 301 302	Semi-fixed 22kQ(B)	CCP1129			

# KEH-P7400,P7450

- The KEH-P7450/ES Tuner Amp Unit Parts Lists enumerated the parts which differ from those enumerated in the KEH-P7400/UC Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly. The KEH-P7400/UC Tuner Amp Unit Parts List is given on page 16.

Tuner Amp Unit

Circuit Symbol & No.	KEH-P7400/UC	KEH-P7450/ES
	Part No.	Part No.
IC603	PD4682A	PD4684A
IC731	PD6165A	*****
IC732	PD4633A	*****
Q359,360	DTC314TK	*****
Q604,626	*****	2SA1037K
Q606	*****	DTC124EK
Q607	*****	2SC2412K
D612	*****	MA151WK
D613,614	*****	ERA15-02VH
D616	*****	BR4361F
L601	*****	LCTB2R2K2125
L605	LAU101K	*****
L731	LAU2R2K	*****
X731	CSS1338	*****
R262	*****	RS1/10S183J
R263,619,718	*****	RS1/10S102J
R387,388	RS1/10S821J	*****
R389,390	RS1/10S223J	*****
R424	RS1/16S0R0J	*****
R464	RS1/10S0R0J	RS1/10S152J
R465	*****	RS1/10S0R0J
R616,622,623	*****	RS1/16S103J
R617,618	*****	RS1/16S472J
R620	*****	RS1/10S473J
R624,625,626	*****	RS1/16S223J
R627	*****	RS1/16S272J
R628	*****	RS1/16S751J
R658,659	RA3C473J	*****
R729	*****	RS1/16S473J
R731,732,733,734,735,736,737,738,739	RS1/10S102J	*****
R740,741,742,743,744,745,746,747,748	RS1/10S102J	*****
R749,750,751,752,753,754,755,756	RS1/10S102J	*****
R758,759	RS1/16S102J	*****
R760,761,762,763,764,773	RS1/16S473J	*****
R766	RA3C681J	*****
R768,777,778	RS1/16S681J	*****
R769	RA4C473J	*****
R776,779	RS1/10S473J	*****
C233,236,252,279,285,333,637	CKSYB104K16	CKSQYB104K16
C254	*****	CKSQYB104K16
C262	CKSQYB473K16	*****
C379,380	CEA2R2M50LL	*****
C381,382	CKSYB105K16	*****
C608	*****	CKSQYB103K25
C634,635	CKSQYB103K25	*****
C641	*****	CCSQCH101J50
C734	CEA100M16LL	*****

## 8. BLOCK DIAGRAM

● KEH-P7400/UC

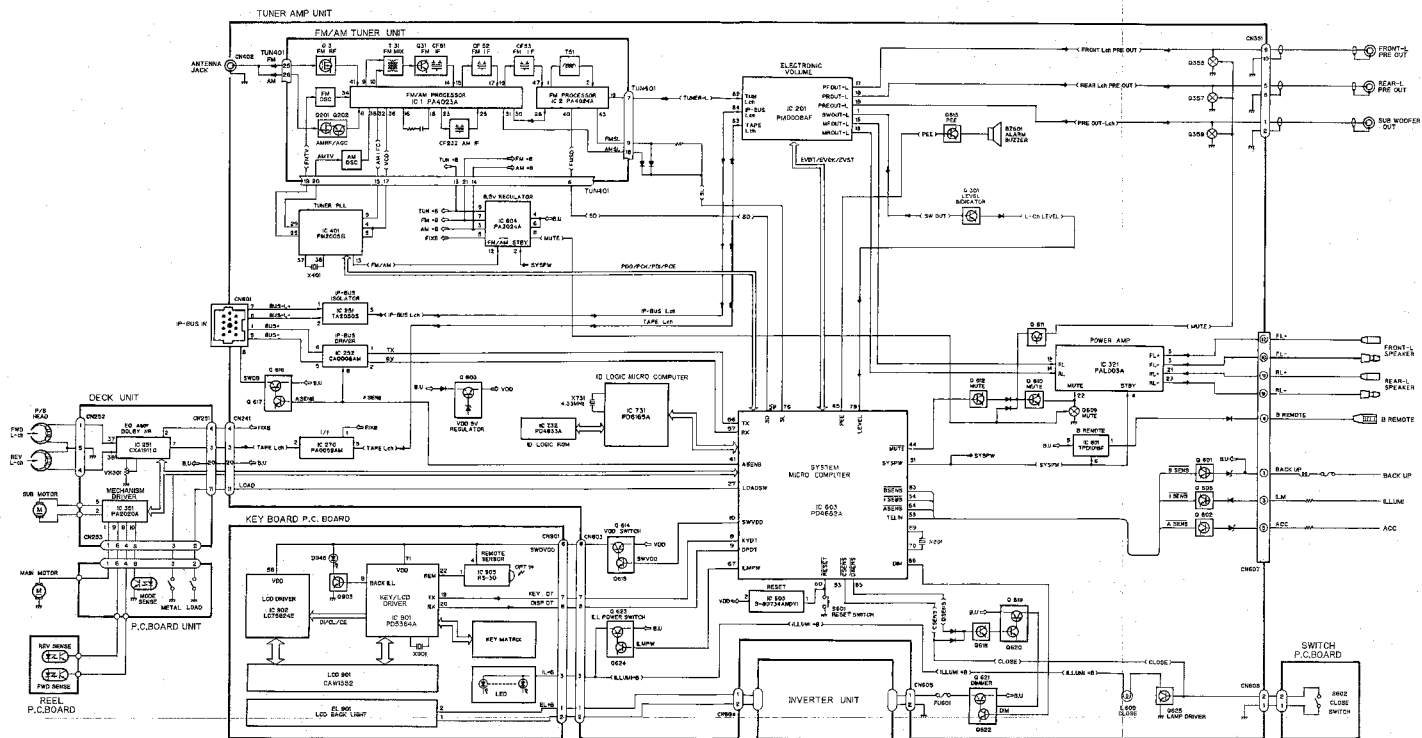
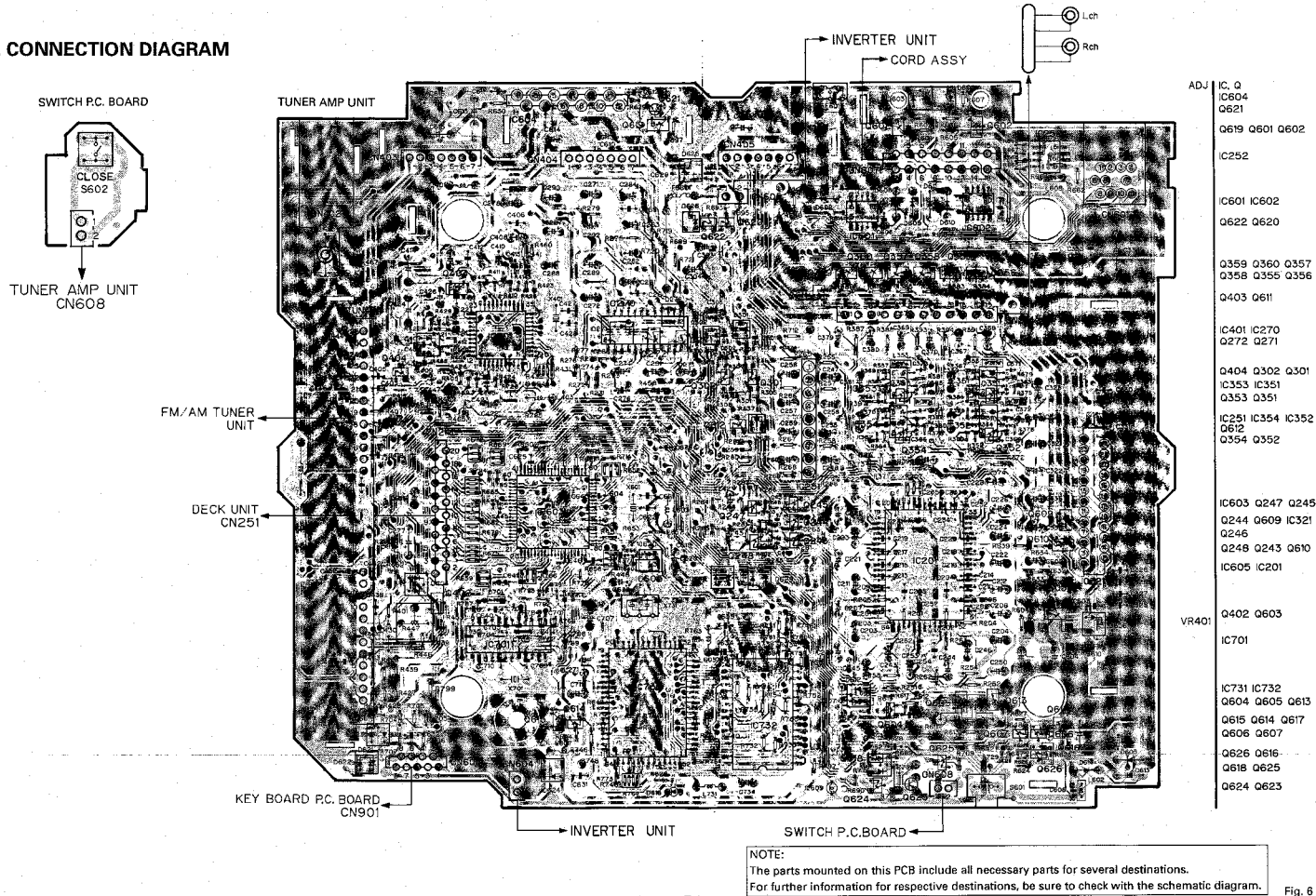
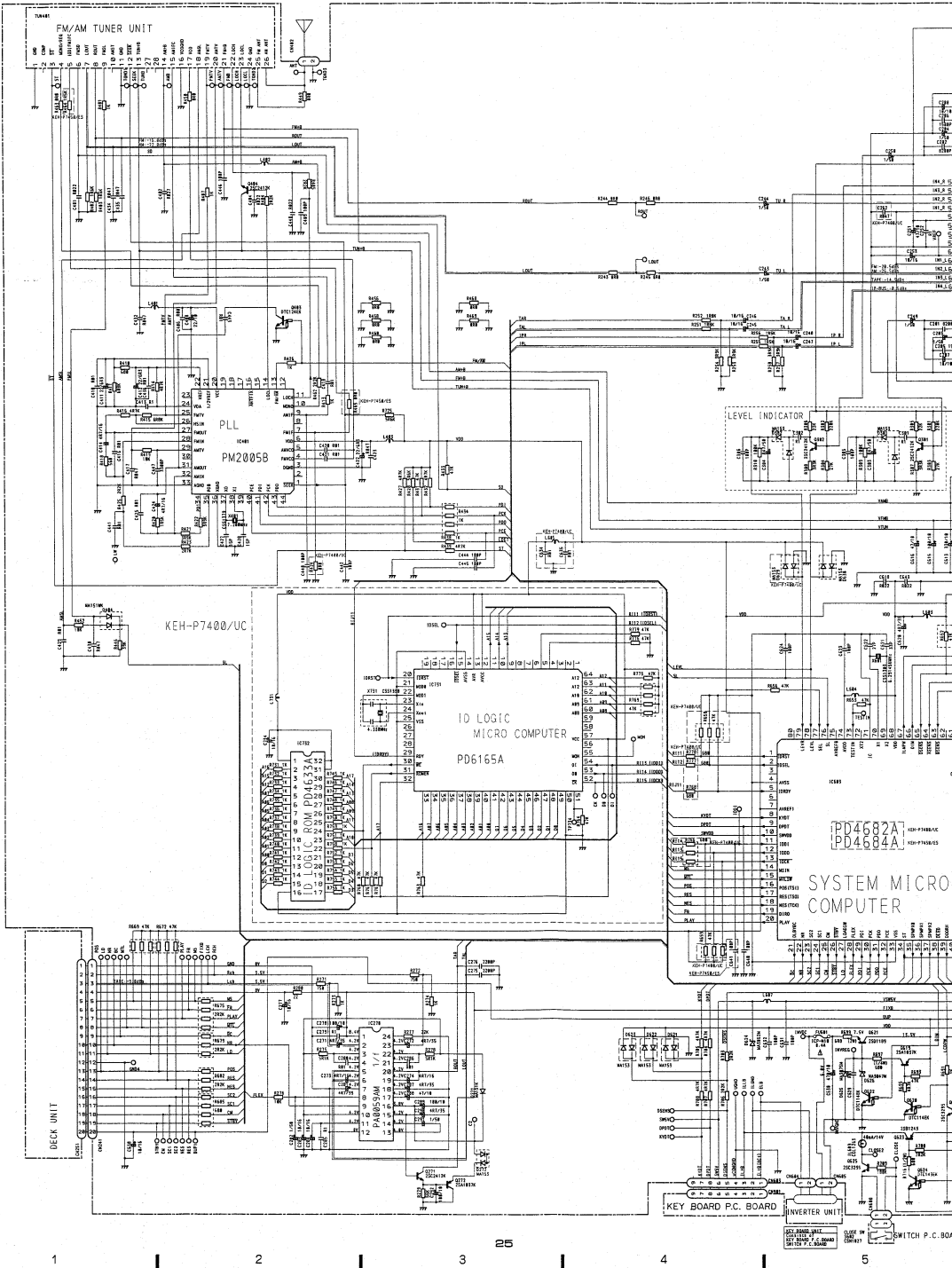


Fig. 5

9. CONNECTION DIAGRAM



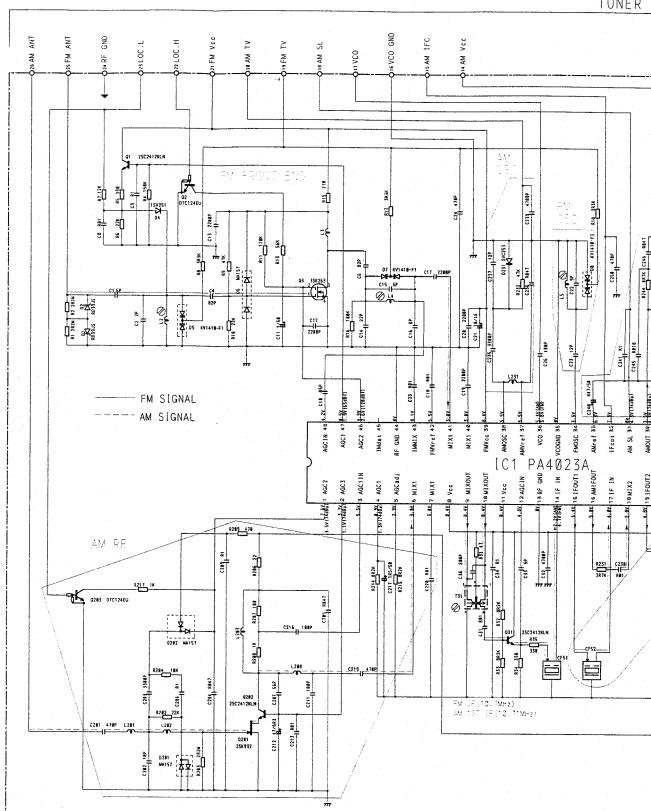
10. SCHEMATIC CIRCUIT DIAGRAM





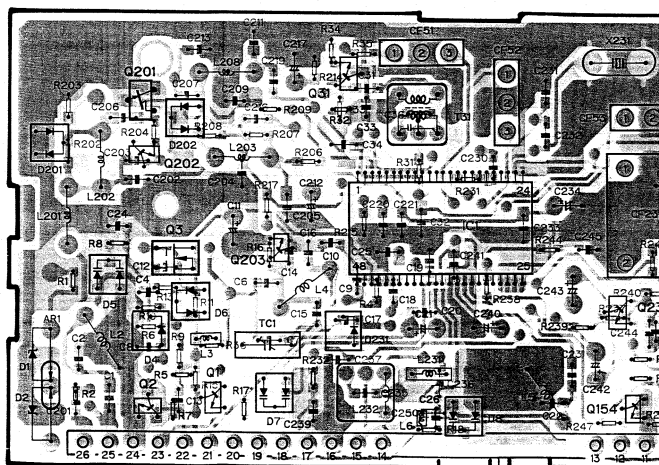


### ● Circuit Diagram



### ● Connection Diagram

IC, Q		Q201 Q202 Q2	Q3	Q1	Q203	Q31	IC1	Q232 Q154
ADJ	L2				TC1 L4	L232	T31	L5



TUNER AMP UNIT

# TUNER AMP UNIT

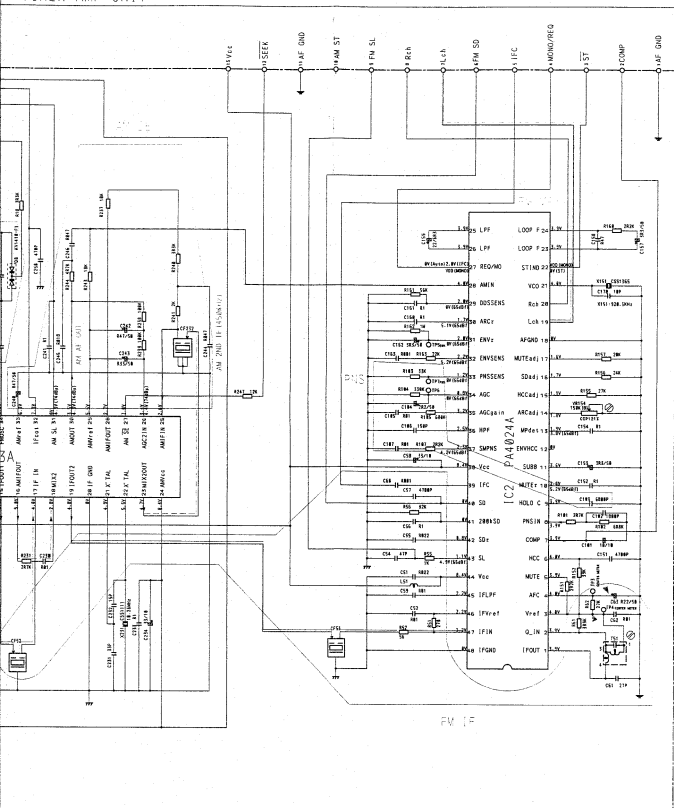


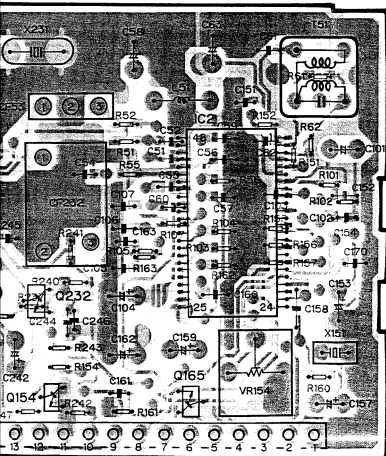
Fig. 8

Q232  
Q154

Q165 IC2

VR154

T51



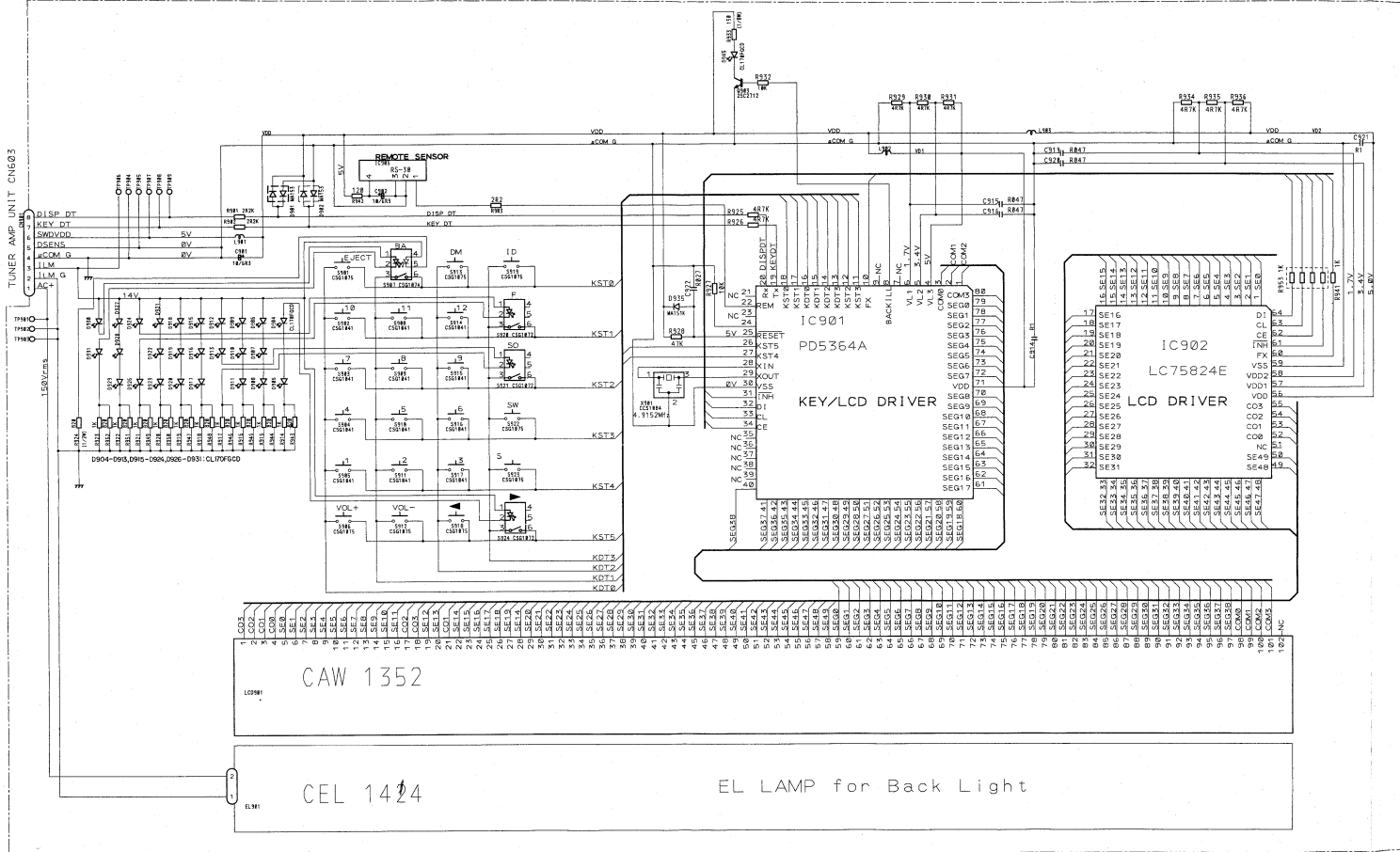
## NOTE:

The parts mounted on this PCB include all necessary parts for several destinations.  
For further information for respective destinations, be sure to check with the schematic diagram.

Fig. 9

### ● Circuit Diagram

TUNER AMP UNIT CN603



KEY BOARD P.C. BOARD

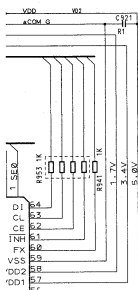
## ● Connection Diagram

IC Q IC905

IC901

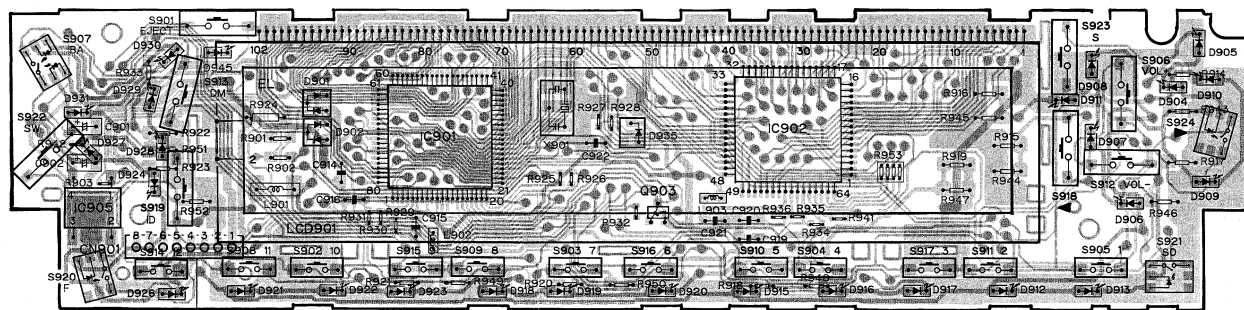
Q903

IC902



KEY BOARD UNIT  
Consists of  
KEY BOARD P.C. BOARD  
SWITCH P.C. BOARD

Fig. 10



TUNER AMP UNIT CN603

Fig. 11

## NOTE:

The parts mounted on this PCB include all necessary parts for several destinations.  
For further information for respective destinations, be sure to check with the schematic diagram.

11.3 CASSETTE MECHANISM MODULE

● Circuit Diagram

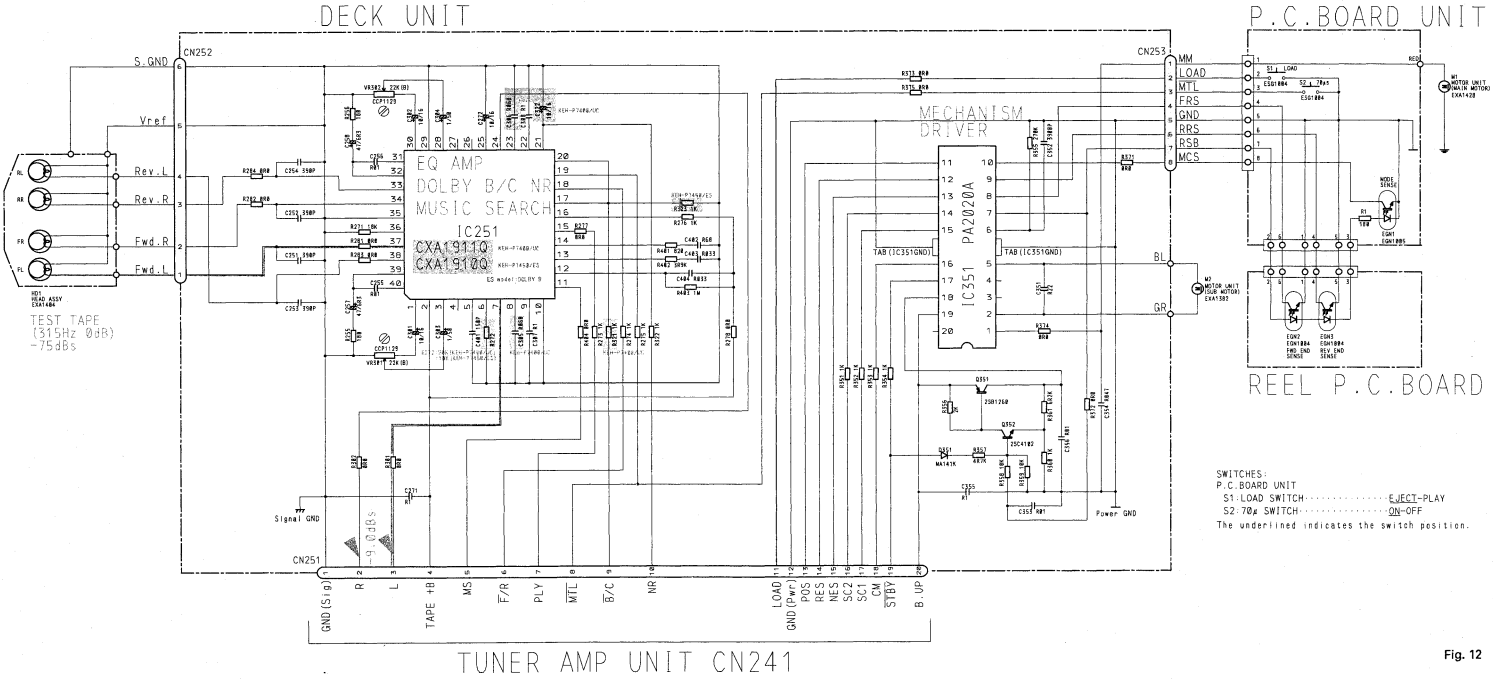
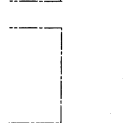
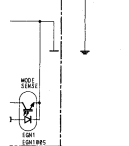
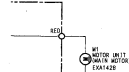


Fig. 12

● Connection Diagram

RD UNIT



C. BOARD

... EJECT-PLAY  
... ON-OFF  
e Switch position.

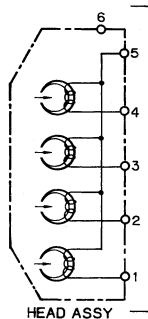
DECK UNIT

IC. Q

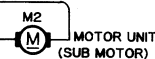
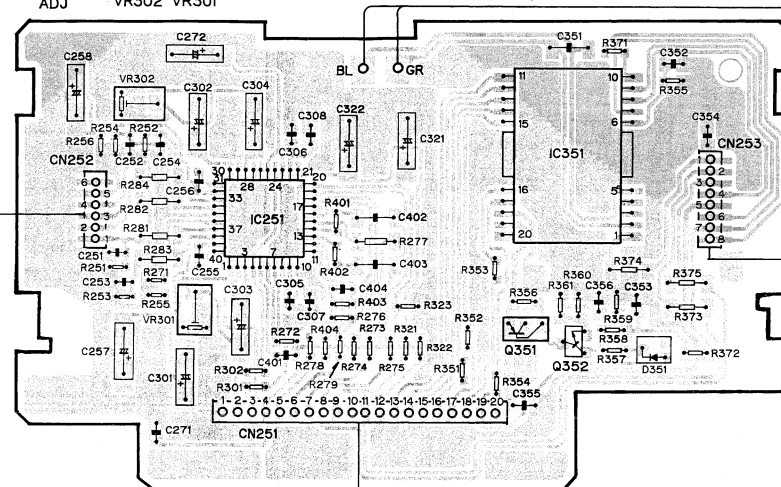
IC251

Q351 IC351 Q352

ADJ VR302 VR301



HEAD ASSY

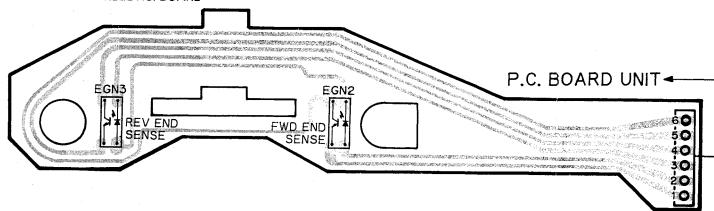


MOTOR UNIT  
(SUB MOTOR)

P.C. BOARD UNIT

TUNER AMP UNIT CN241

REEL P.C. BOARD



P.C. BOARD UNIT

P.C. BOARD UNIT

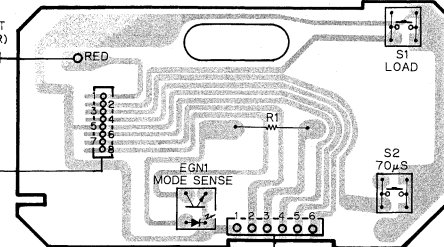


MOTOR UNIT  
(MAIN MOTOR)



S1  
LOAD

DECK UNIT  
CN253



REEL P.C. BOARD

Fig. 13

NOTE:

The parts mounted on this PCB include all necessary parts for several destinations.  
For further information for respective destinations, be sure to check with the schematic diagram.

## 12. EXPLODED VIEW AND PARTS LIST

### 12.1 CHASSIS

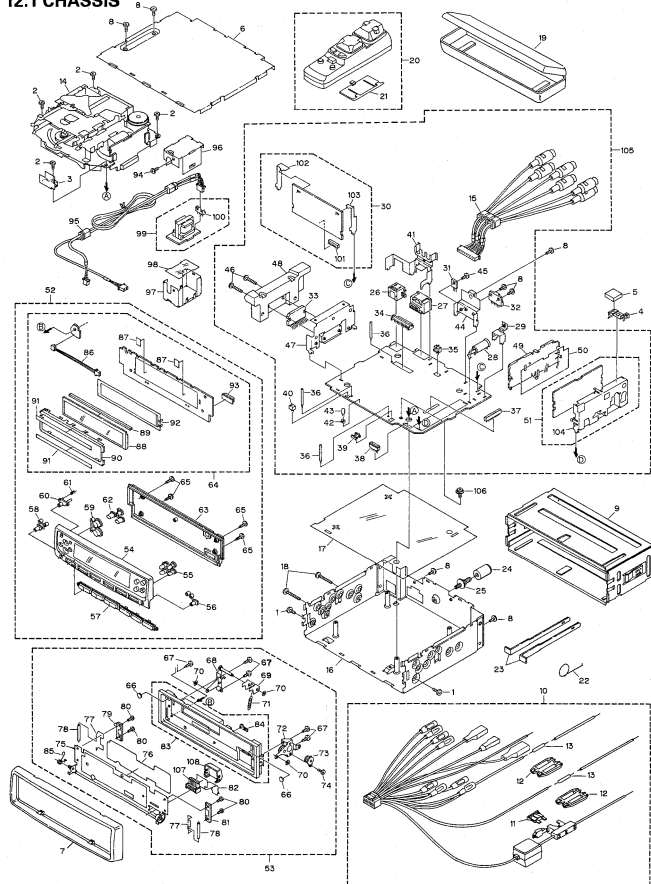


Fig. 14  
39

#### NOTE:

● Parts marked by " \* " are generally unavailable because they are not in our Master Spare Parts List.

#### ● Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.	Mark
1	Screw	BMZ30P040FMC	40	Plug(CN608)	CKS-783	
2	Screw	BSZ26P050FMC	41	Holder(KEH-P7400/UC)	CNC6644	
3	Holder	CNC6357	42	Holder(KEH-P7450/ES)	CNC6692	
4	Earth Board	CNC6681	43	Holder	CNV1906	
5	Spacer	CNM4913	44	Lamp(IL609)	CEL1263	
6	Case	CNB2028	45	Holder	CNC5491	
7	Panel	CNS3113	46	Screw	BSZ30P080FMC	
8	Screw	BSZ30P060FMC	47	Screw	BSZ26P160FMC	
9	Holder	CNC4846	48	Holder	CNC6361	
10	Cord Assy(KEH-P7400/UC)	CDE5011	49	Heat Sink	CNR1419	
	Cord Assy(KEH-P7450/ES)	CDE4891	50	Holder	CNC6356	
11	Fuse	CEK1136	51	Insulator	CNM4684	
12	Cap	CNS1472	52	FM/AM Tuner Unit	CWE1417	
13	Resistor	RS1/2P102JL	53	Detach Grille Assy (KEH-P7400/UC)	CXA8933	
14	Cassette Mechanism Module (KEH-P7400/UC)	EKK3130		Detach Grille Assy (KEH-P7450/ES)	CXA8934	
	Cassette Mechanism Module EKK3110 (KEH-P7450/ES)		54	Panel Assy(KEH-P7400/UC)	CXA9417	*
15	Cord(KEH-P7400/UC)	CDE4383		Panel Assy(KEH-P7450/ES)	CXA8938	
	Cord(KEH-P7450/ES)	CDE4898	55	Grille Unit(KEH-P7400/UC)	CXA8718	
16	Chassis Unit	CXA8952		Grille Unit(KEH-P7450/ES)	CXA8721	
17	Insulator	CNM4686	56	Button(DM,ID,BA,SW) (KEH-P7400/UC)	CAC4650	
18	Screw	BSZ30P200FMC	57	Button(DM,+,BA,SW) (KEH-P7450/ES)	CAC4653	
19	Case Assy	CXA7194	58	Button(F)	CAC4479	
20	Remote Control Assy	CXA9127	59	Button(1-12)(KEH-P7400/UC)	CAC4544	
21	Cover	CNS3477	60	Button(1-12)(KEH-P7450/ES)	CAC4545	
22	Spring	CBH-865	61	Button(SO)	CAC4478	
23	Handle	CNC5395	62	Button(+,-)	CAC4648	
24	Bush	CNV1009	63	Button(-)	CAC4475	
25	Screw	CBA1284	64	Spring	CBH1844	
26	Connector(CN601)	CKS3408	65	Button(<,>,S)	CAC4481	
27	Plug(CN607)	CKM1187	66	Cover Unit	CXA8707	
28	Antenna Jack(CN402)	CKX1006	67	Key Board Unit	CWM4756	
29	Holder	CNC4569	68	Screw	BPZ20P080FZK	
30	****		69	Cushion	CNM2247	
31	Transistor(Q621)	2SD1189	70	Screw	BPZ20P050FMC	
32	IC(IC604)	PA2024A	71	Holder Unit	CKA7161	
33	IC(IC321)	PAL003A	72	Arm	CNC5495	
34	Plug(CN351)(KEH-P7400/UC)	CKS1248				
	Plug(CN351)(KEH-P7450/ES)	CKS1242				
35	Plug(CN605)	CKS1222	73	Washer	CBF1001	
36	Clamping	CEF1005	74	Spring	CBH1395	
37	Connector(CN241)	CKS1730		Holder Unit	CXA7793	
38	Connector(CN603)	CKS2239		Damper Unit	CKA7159	
39	Plug(CN604)	CKS1236		Screw(M2x30)	CBH1077	

## NOTE:

● Parts marked by "\*" are generally unavailable because they are not in our Master Spare Parts List.

## ● Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.	Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Screw	BMZ30P040FMC	40	Plug(CN608)	CKS-783	75	Holder Unit	CXA7958	94	Screw	BSZ26P050FMC
2	Screw	BSZ26P050FMC	41	Holder(KEH-P7400/UC)	CNC6644	76	Sheet	CNM4179	95	Cord	MDE9001
3	Holder	CNC6357	42	Holder(KEH-P7450/ES)	CNC6492	77	Spring	CBH1528	96	Holder	MNC9002
4	Earth Board	CNC6681	43	Holder	CNV1906	78	Roller	CLA2041	97	Holder	MNC9001
5	Spacer	CNM4913	43	Lamp(IL609)	CEL1263	79	Holder	CNV3964	98	Insulator	MNM9001
6	Case	CNB2028	44	Holder	CNC5491	80	Screw(M2x30)	CBA1082	99	Inverter Unit	MWM9001
7	Panel	CNS3113	45	Screw	BSZ30P080FMC	81	Holder	CNV2141	100	Plug(CN101)	CKS1224
8	Screw	BSZ30P060FMC	46	Screw	BSZ26P160FMC	82	P.C.Board	CNP4440	101	Plug(CN151)	CKS1616
9	Holder	CNC4946	47	Holder	CNC6361	83	Panel Unit(KEH-P7400/UC)	CXA7441	102	Holder	CNC5713
10	Cord Assy(KEH-P7400/UC)	CDE5011	48	Heat Sink	CNR1419	83	Panel Unit(KEH-P7450/ES)	CXA8724	103	Holder	CNC6676
11	Cord Assy(KEH-P7450/ES)	CDE4891	49	Holder	CNC6356	84	Clear Plastic Plate	CNV4479	104	Holder	CNC6555
12	Fuse	CEK1136	50	Insulator	CNM4684	85	Spring	CBH1660	105	Tuner Amp Unit (KEH-P7400/UC)	CWM4744
13	Cap	CNS1472	51	FM/AM Tuner Unit	CWE1417	86	Cord	CDE4387	106	Screw	BSZ30P055FUC
14	Resistor	RS1/2P102JL	52	Detach Grille Assy (KEH-P7400/UC)	CXA8933	87	Film	CNM4349	107	Connector(CN940)	CKS2780
14	Cassette Mechanism Module (KEH-P7400/UC)	EXK3130	52	Detach Grille Assy (KEH-P7450/ES)	CXA8934	88	LCD	CAW1352	108	Cover	CNV3965
	Cassette Mechanism Module EXK3110 (KEH-P7450/ES)		53	Panel Assy(KEH-P7400/UC)	CXA9417	89	Connector	CNV4430			
15	Cord(KEH-P7400/UC)	CDE4383	53	Panel Assy(KEH-P7450/ES)	CXA8938	90	Holder	CNC6142			
	Cord(KEH-P7450/ES)	CDE4898	54	Grille Unit(KEH-P7400/UC)	CXA8718	* 91	Spacer	CNM4957			
16	Chassis Unit	CXA8952		Grille Unit(KEH-P7450/ES)	CXA8721	92	EL(EL901)	CEL1424			
17	Insulator	CNM4686	55	Button(DM,ID,BA,SW) (KEH-P7400/UC)	CAC4650	93	Connector(CN901)	CKS2733			
18	Screw	BSZ30P200FMC		Button(DM,-,BA,SW) (KEH-P7450/ES)	CAC4653						
19	Case Assy	CXA7194									
20	Remote Control Assy	CXA9127	56	Button(F)	CAC4479						
21	Cover	CNS3477	57	Button(1-12)(KEH-P7400/UC)	CAC4544						
22	Spring	CBH-865		Button(1-12)(KEH-P7450/ES)	CAC4545						
23	Handle	CNC5395	58	Button(SO)	CAC4478						
24	Bush	CNV1009	59	Button(+,-)	CAC4648						
25	Screw	CBA1284	60	Button(-)	CAC4475						
26	Connector(CN601)	CKS3408	61	Spring	CBH1844						
27	Plug(CN607)	CKM1187	62	Button(<,>,S)	CAC4481						
28	Antenna Jack(CN402)	CKX1006	63	Cover Unit	CXA8707						
29	Holder	CNC4569	64	Key Board Unit	CWM4756						
30	****		65	Screw	BPZ20P080FZK						
31	Transistor(C621)	2SD1189	66	Cushion	CNM2247						
32	IC(C604)	PA2024A	67	Screw	BPZ20P050FMC						
33	IC(C321)	PAL003A	68	Holder Unit	CXA7161						
34	Plug(CN351)(KEH-P7400/UC)	CKS1246	69	Arm	CNC5495						
	Plug(CN351)(KEH-P7450/ES)	CKS1242									
35	Plug(CN605)	CKS1222	70	Washer	CBF1001						
36	Clamper	CEF1005	71	Spring	CBH1395						
37	Connector(CN241)	CKS1730	72	Holder Unit	CXA7793						
38	Connector(CN603)	CKS2239	73	Damper Unit	CXA7159						
39	Plug(CN604)	CKS1236	74	Screw(M2x30)	CBA1077						



## 12.2 CASSETTE MECHANISM MODULE

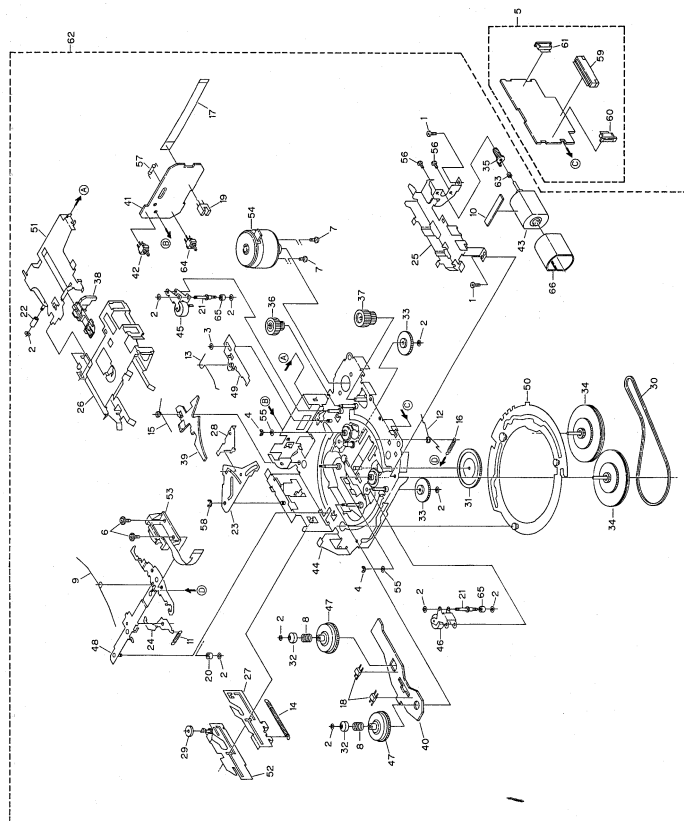


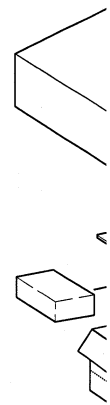
Fig. 15

## ● Parts List

Mark No.	Description	Part No.
1	Screw	BSZ20P040FMC
2	Washer	CBF1037
3	Washer	CBF1038
4	Washer	CBG1003
5	Deck Unit(KEH-P7400/UC) CWM4528	
	Deck Unit(KEH-P7450/ES) CWM4527	
6	Screw	EBA1028
7	Screw	EBA1037
8	Spring	EBH1531
9	Spring	EBH1512
10	Cushion	ENM1034
11	Spring	EBH1515
12	Spring	EBH1587
13	Spring	EBH1517
14	Spring	EBH1518
15	Spring	EBH1519
16	Spring	EBH1537
17	Cord	EDD1015
18	Photo-reflector(EGN2,3)	EGN1004
19	Photo-interrupter(EGN1)	EGN1005
20	Roller	ENR1031
21	Shaft	ELA1362
22	Roller	ELA1348
23	Arm	ENC1396
24	Arm	ENC1397
25	Guide	ENC1398
26	Holder	ENC1417
27	Lever	ENC1448
28	Arm	ENC1401
29	Roller	ENR1027
30	Belt	ENT1027
31	Gear	ENV1347
32	Collar	ENV1349
33	Gear	ENV1350
34	Flywheel	ENV1410

Mark No.	Description	Part No.
35	Worm Gear	ENV1439
36	Worm Wheel	ENV1440
37	Gear	ENR1028
38	Lever	ENV1442
39	Arm	ENV1445
40	Gathering P.C.Board	ENX1029
41	Gathering P.C.Board	ENX1030
42	Switch(S1)	ESG1004
43	Motor Unit(M2)	EXA1382
44	Chassis Unit	EXA1476
45	Pinch Roller Unit	EXA1472
46	Pinch Roller Unit	EXA1473
47	Reel Unit	EXA1386
48	Head Base Unit	EXA1434
49	Lever Unit	EXA1438
50	Gear Unit	EXA1389
51	Frame Unit	EXA1459
52	Lever Unit	EXA1439
53	Head Assy(HD1)	EXA1404
54	Motor Unit(M1)	EXA1428
55	Washer	HBF-179
56	Screw	JGZ20P025FNI
57	Resistor(R1)	RD1/4HM181J
58	Washer	YE20FUC
59	Connector(CN251)	CKS1711
60	Connector(CN252)	CKS2127
61	Connector(CN253)	CKS2129
62	Spare Unit(KEH-P7400/UC)	EXA3003
	Spare Unit(KEH-P7450/ES)	EXA3001
63	Spring	EBH1545
64	Switch(S2)	ESG1004
65	Roller	ENR1023
66	Shield	ENC1410

## 13. PACKING



## ● Parts List

Mark No.	Description
1	Cl
2	Ci
3	Pr
4	Pr
5	Pc
6	St
7	Re
8	Cc
9-1	O
9-2	In
9-3	Cl
9-4	Ci
9-5	O
9-6	Pc
10	Ar
11	Ar
12	Ar

Mark	No.	Description
------	-----	-------------

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### 13. PACKING METHOD

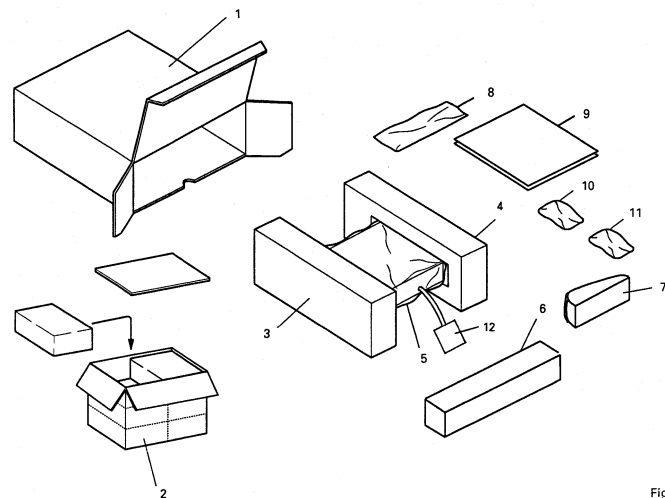


Fig.16

		KEH-P7400/UC	KEH-P7450/ES
Mark	No.	Description	Part No.
	1	Carton	CHG2984
	2	Contain Box	CHL2984
	3	Protector	CHP1688
	4	Protector	CHP1687
	5	Polyethylene Bag	CEG1173
	6	Spacer	CHW1433
	7	Remote Control Assy	CXA9127
	8	Cord Assy	CDE5011
	9-1	Owner's Manual	CRD2146
	9-2	Installation Manual	CRD2006
	9-3	Chart	CRB1378
	9-4	Card	ARY1048
	9-5	Owner's Manual	CRD2131
	9-6	Polyethylene Bag	CEG1116
	10	Accessory Assy	CEA2066
	11	Accessory Assy	CEA2081
	12	Air.Cap.	CEG1192

● Owner's Manual

● Installation Manual

Model	Part No.	Language
KEH-P7400/UC	CRD2146	English, French
	CRD2006	English, French
KEH-P7450/ES	CRD2130	English, French
	CRD2131	Spanish, Arabic
	CRD2012	English, French, Spanish, Arabic

● Accessory Assy

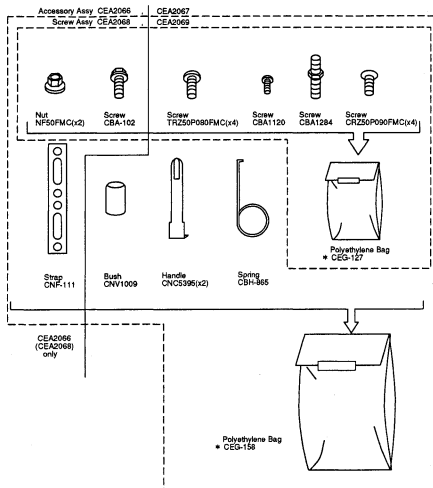


Fig.17

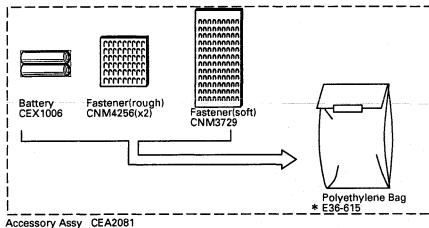
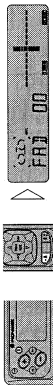


Fig.18

### Balance Adjustment

This function allows you to select a Fader/Balance setting that provides ideal listening conditions in all occupied seats.

**1. Select the Fader/Balance mode.**



After adjustment use the S or A button to return to the normal display.

**2. Shift the balance progressively to the front or rear speakers.**



"FAD F15" - "FAD R15" is displayed as it moves from front to rear.

Note:

- "FAD 00" is the proper setting when 2 speakers are in use.

**3. Shift the balance to the left or right speaker, respectively.**



"BAL L9" - "BAL R9" is displayed as it moves from left to right.

# Service Manual

ORDER NO.  
**CRT1640**

CASSETTE MECHANISM ASSY

# CX-631

- This service manual describes operation of the cassette mechanism incorporated in models listed in the table below.
- When performing repairs use this manual together with the specific manual for model under repair.

Model	Service Manual	Cassette Mechanism Unit	Deck Unit
KEH-P990/UC	CRT1639	EXK3170	CWM3954
KEX-P820/ES	CRT1656		
KEX-P820RDS/EW	CRT1638		
KEH-P9200RDS/EW, X1BEW	CRT1638	EXK3130	CWM3953
KEH-P9250/ES	CRT1656		
KEH-P8200/UC	CRT1639		
KEH-P8200RDS/EW, X1BEW	CRT1638		
KEH-P8250/ES	CRT1656		
KEH-P790/UC	CRT1654	EXK3110	CWM3952
KEH-P7250/ES	CRT1652		
KEH-P7200RDS/EW	CRT1653		
KEH-P7200/UC	CRT1654		
KEH-P7100RDS/EW	CRT1653		
KEH-P6200/UC	CRT1652		
KEH-P6200RDS/EW	CRT1653	EXK3105	CWM4212
KEH-P6100RDS/EW	CRT1653	EXK3100	CWM3951
KEH-P590/UC	CRT1652		
KEH-P5250/ES	CRT1652		
KEH-P5200/UC	CRT1652		
KEH-P25RDS/EW	CRT1653		
KEH-P15RDS/EW	CRT1653		

## CONTENTS

1. MECHANISM DESCRIPTION AND GREASING .....2
2. DISASSEMBLY ..... 11
3. ADJUSTMENT ..... 11

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K-FFD.DEC. 1994 Printed in Japan

# 1. MECHANISM DESCRIPTION AND GREASING

## 1.1 DRIVE OPERATION

Inserting the cassette tape → Draw in → Put it down → Release → Forward play → REW → FF → Reverse play  
 Eject → Draw out → Lift

All motive force(except the force for running a tape) is supplied by sub-motor.

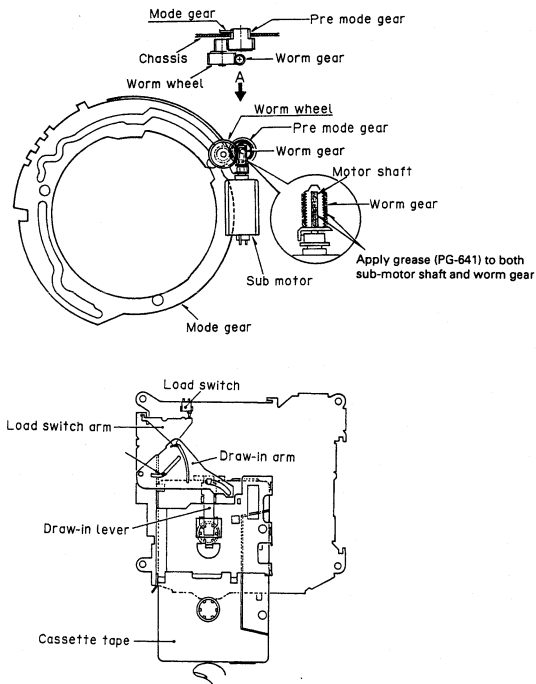


Fig.1

## 1.2 LOADING AND EJECT OPERATIONS

### ● Loading the Cassette Tape

1. Push the cassette tape by finger.
2. The draw-in lever is pushed by the cassette tape. And the load switch is turned on by way of the draw-in arm and of the load switch arm.
3. The sub-motor starts running.
4. The mode gear turns in direction (1).
5. The put-down driving lever moves in direction (2).
6. Move the put-down lever operation shaft in direction (3) and turn the draw-in arm in direction (4).
7. The cassette tape is loaded.

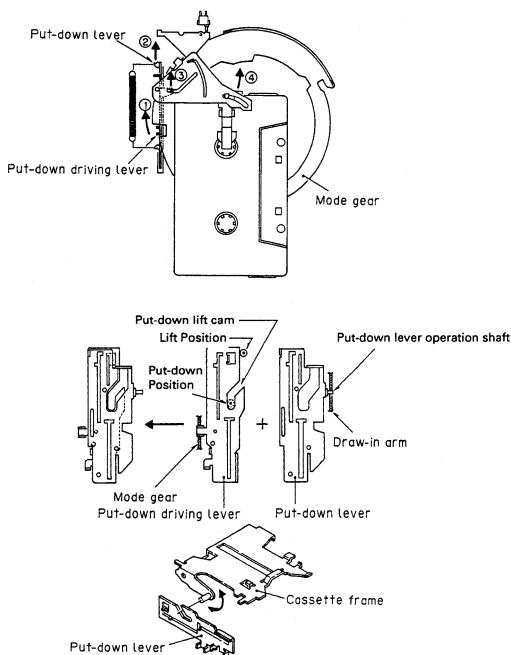


Fig.2

**● Ejecting the Cassette Tape**

- 1.The sub-motor starts running in the direction opposite to that in loading.
- 2.The mode gear turns in direction (5).
- 3.The put-down driving lever moves in direction (6).
- 4.Move the put-down lever operation shaft in direction (7) and turn the draw-in arm in direction (8).
- 5.Pull the load switch arm toward you and turn off the load switch.
- 6.The sub-motor stops.
- 7.The cassette tape is ejected.

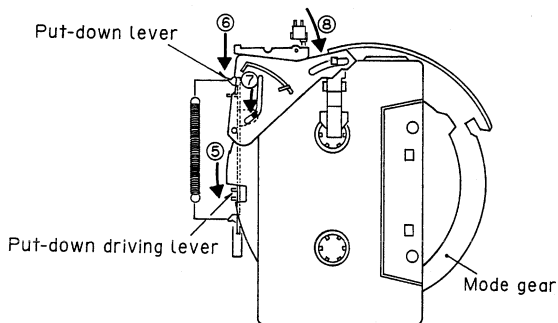


Fig.3



## 1.3 MODE CHANGEOVER

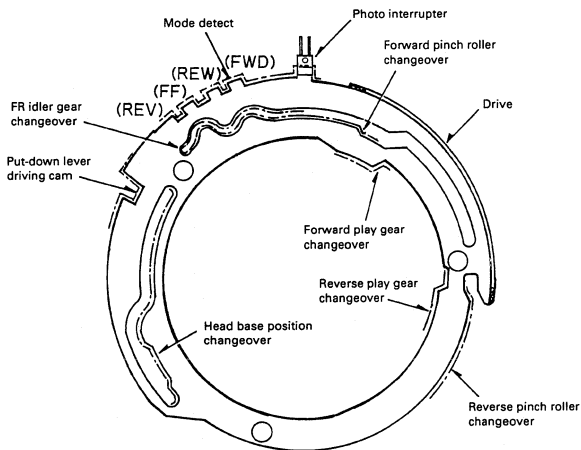


Fig.4

The mode gear is rotated by rotation of the pre mode gear which is driven by the sub-motor. The modes are in series in the order of "release"→"forward play"→"REW"→"FF"→"reverse play". The rotation of the mode gear makes changeover of the head position, press contact between the pinch rollers(forward, reverse), the rewinding reel rotation, etc.

The actions to be performed in the separate mode are show in Fig.5 through 9.

● Release

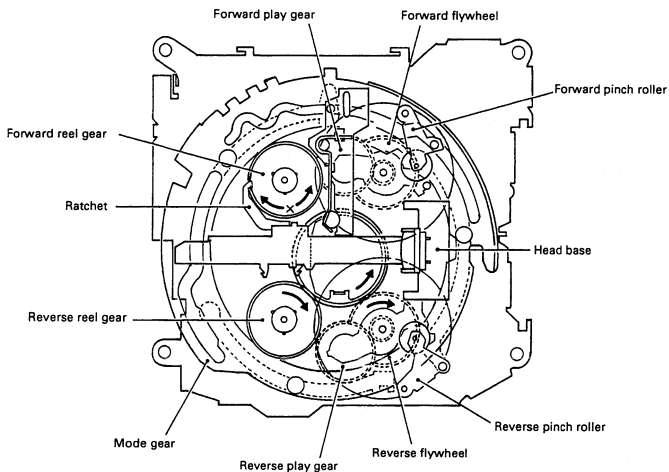


Fig.5

## ● Forward Play

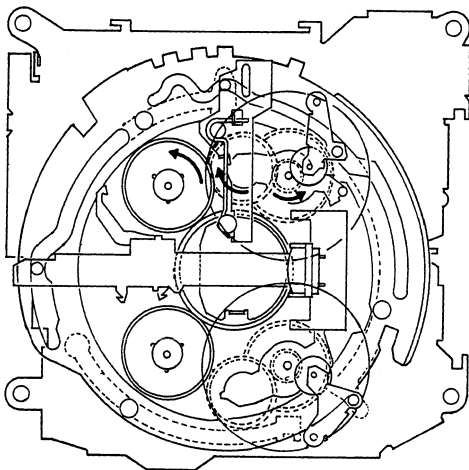


Fig.6

● REW

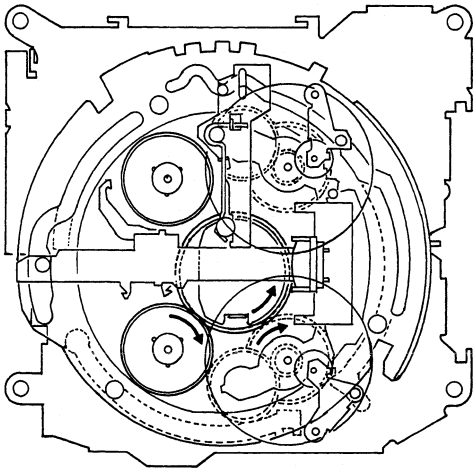


Fig.7

● FF

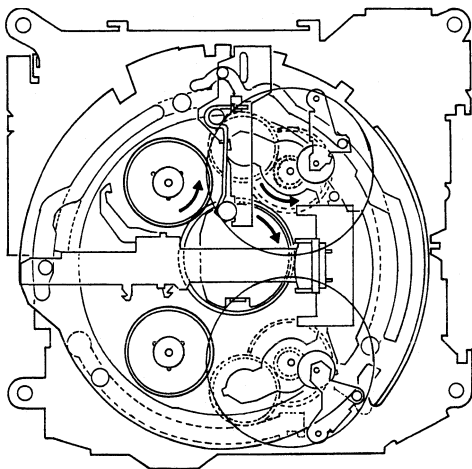


Fig.8

● Reverse Play

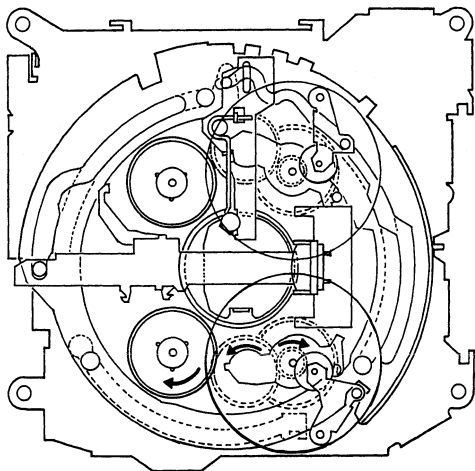


Fig.9

## 2. DISASSEMBLY

### ● How to Remove the Cassette Holder

1. Remove the washer and two arms.
2. Remove the two screws, and then remove the guide assembly.
3. Straighten the frame unit pawl, and remove both holder and frame unit.

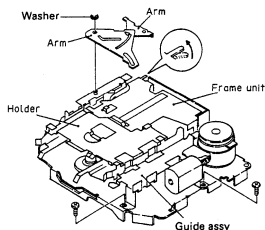


Fig.10

### ● How to Remove the Reel Unit

1. Remove the washer.
2. Push the arm in the arrow-marked direction and remove the reel assembly.

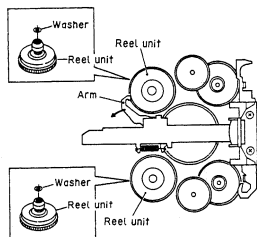


Fig.11

## 3. ADJUSTMENT

### 3.1 TAPE SPEED ADJUSTMENT

#### ● To Adjust

Reproduce NCT-111 (3kHz, -10dB). Adjust the semi-fixed resistor so that frequency counter shows 3015Hz(+75Hz, -45Hz).

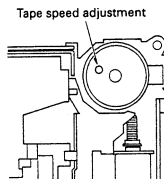


Fig.12

## 3.2 CHECK POINTS OF CASSETTE MECHANISM

<p>Confirm the following items when replacing parts of the cassette mechanism .</p>	<p>■ Tape speed deviation: 3,000Hz +90Hz, -30Hz (4.76cm/s +3%, -1%)</p> <p>Using an NCT-111, measure the speed at the start and end of winding and take the maximum values. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5-6 seconds.</p>	<p>■ Wow and flutter: Less than 0.15%(WRMS)</p> <p>Using the NCT-111, measure the wow and flutter at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70 % of the minimum and maximum values. Measuring time shall be 5-6 seconds.</p>
<p>■ Fast forward and rewinding time: 100-120 seconds</p> <p>Using a C-60, set to fast forward and rewind, and measure the time with a stop watch.</p>	<p>■ Winding torque: 45-70 g-cm</p> <p>Using a cassette type torque meter (100 g-cm), measure the minimum value while in the play mode. Measuring time shall be 2.5-6 seconds.</p>	<p>■ F.F. torque: More than 50 g-cm</p> <p>Using a cassette type torque meter (130 g-cm), measure the value when the tape stops in the F.F. mode.</p>
<p>■ REW torque: More than 50 g-cm</p> <p>Using a cassette type torque meter (130 g-cm), measure the value when the tape stops in the REW mode.</p>	<p>■ Back tension torque: 1.5-5.5 g-cm</p> <p>After setting the REW mode without loading a cassette tape for 5 minutes, measure the back tension torque in the play mode, using a cassette type torque meter.</p>	